

Default Hypotheses in the Study of Perception: A Reply to Phillips

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Abstract:

Some theorists have recently raised doubts about much of the experimental evidence purporting to demonstrate the existence of unconscious perception. In our (2019) in this journal, we argued some of these considerations are not decisive. Phillips (forthcoming a) replies thoughtfully to our paper, concluding that he is unconvinced by our arguments. Phillips maintains that the view that perception is invariably conscious remains, as he puts it, the “default” hypothesis both within the folk understanding and experimental study of perception. There is much to agree with in Phillips’ piece, but there remain some substantive points of disagreement, which we outline here.

Keywords: perception; consciousness; problem of criterion; problem of attribution

1. Introduction

Is there evidence for unconscious perception? Consider experiments involving masked priming, wherein target stimuli are visually presented for limited durations and masked by other stimuli, which results in participants’ reporting that they do not see the target stimuli, though the stimuli nonetheless prime downstream behavior (see, e.g., Bachmann & Francis 2013). A standard interpretation (for an overview, see, e.g., Persuh 2018)—is that while the target stimuli are not *consciously perceived*, they are *unconsciously* perceived. Call this hypothesis ‘UNCONSCIOUS’.

There is, however, an alternative hypothesis—namely, that in many such studies, the target stimuli *are* consciously perceived, but in a degraded way, and participants thus fail to report perceiving them due to conservative response criteria. Call this competing hypothesis ‘CONSCIOUS’.

Phillips (e.g., Phillips 2016; Phillips & Block 2016; Peters et al. 2017; Phillips 2018; Phillips forthcoming b) has raised doubts about much of the experimental evidence purporting to support UNCONSCIOUS as against CONSCIOUS. In our (2019), we argued that many of Phillips’ and some related considerations are not decisive. Phillips (forthcoming a) replies thoughtfully to our paper, concluding that he “remain[s] unconvinced” (p. x).¹

As we understand it, Phillips’ central claim in his reply is that CONSCIOUS is (or should be) what he calls the ‘default’ hypothesis both within the folk understanding and the experimental study of perception. It thus seemingly falls to proponents of UNCONSCIOUS to provide compelling evidence for their position. In his work, however, Phillips carefully reviews much of the experimental literature, arguing that, for any result that proponents of UNCONSCIOUS cite in favor of their view, they do not rule out two possibilities. First, most experiments simply do not control satisfactorily for criterion bias and thus do not rule out CONSCIOUS. This is often called ‘the problem of the criterion’. Second, many studies would seem vulnerable to what Phillips calls ‘the problem of attribution’: the possibility that target stimuli are not perceived at all, but rather only perceptually processed in a subpersonal way. Phillips concludes that CONSCIOUS thus remains the default hypothesis.

¹ All references to Phillips’ work refer to his (forthcoming a), unless otherwise noted.

We begin in section 2 by arguing that, despite Phillips' misgivings, UNCONSCIOUS may be the default hypothesis in folk and perceptual psychology. But even if UNCONSCIOUS were not the default hypothesis, we propose that what matters is that UNCONSCIOUS is an open hypothesis that is consistent with folk psychology and taken seriously by some cognitive scientists, which, as we argued in our (2019), it plainly is. Moreover, we argue in section 3 that as it stands there are no positive reasons to reject UNCONSCIOUS and that more experimental work is thereby needed to settle the matter. In section 4, we suggest some ways to move forward in this debate, urging that Phillips must provide positive reasons for thinking that CONSCIOUS is true, apart from its purportedly being the default hypothesis. We close in section 5 by arguing that Phillips fails to adequately respond to the dilemma we posed in our (2019) for the skeptic of UNCONSCIOUS. We conclude that there remain good reasons to think that UNCONSCIOUS not only may be, but also is, the *correct* hypothesis.

2. UNCONSCIOUS as the “default” hypothesis

In his reply, Phillips does not explicitly articulate what he takes a “default” hypothesis to be, but his remarks suggest a few possible interpretations. First, he seems to indicate that a default hypothesis about some subject matter is the view that is largely accepted in both commonsense discourse and in the relevant science(s). In our (2019) paper, we made remarks suggesting that we regard UNCONSCIOUS as the default hypothesis in this way, as we urged that rejecting UNCONSCIOUS would entail revision of many individuals' folk and scientific beliefs. Phillips, by contrast, contends that it is “certainly disputable” that the folk or many experimentalists believe in unconscious perception (p. x).

Starting with folk psychology, if Phillips were correct that it does not include unconscious perception, then perhaps UNCONSCIOUS would be at a theoretical disadvantage. After all, to theorize about the nature of something, we must first have a commonsense grip on it, lest our theory fail to account for the relevant phenomenon (see, e.g., Sellars 1963). It is therefore important to correctly describe our ordinary understanding of perception at the outset.

In support of the view that common sense countenances unconscious sensory states, we cited, for example, Reuter & Sytsma's (2020) work in experimental philosophy. In reply, Phillips raises some doubts about the methodology of those studies. But whether or not his criticisms are cogent, more basic evidence that there is folk-psychological support for UNCONSCIOUS is that ordinary people and popular media often describe cases of unconscious perception such as subliminal advertising or hidden messaging (for a striking example, see, e.g., Grow 2015). Likewise, unconscious mentality has been widely discussed in the history of ideas. Prefiguring Freud, Nietzsche developed a complex account of the unconscious mind (see, e.g., Katsafanas 2005). And Coleridge marveled that “Man exists ... to himself & to God alone/—Yea, in how much only to God—how much lies below his own Consciousness” (1957, p. 1554). It is unclear to us why one would insist that perception is excluded in these conceptions of unconsciousness.

Phillips might reply that such uses of ‘perception’ nonetheless fail to distinguish between personal-level—and thus what he thinks is necessarily conscious—perception and subpersonal sensory processing. But we would need independent reason to think that this is the case. Moreover, even if this were correct, it would show only that the commonsense conception is not particularly nuanced and that even some theoretical conceptions of perception are not sensitive to that distinction. We thus think that UNCONSCIOUS is part of folk psychology, or at least consistent with it, rather than a “heterodox” view, as Phillips (p. x) regards it.

Phillips argues instead that CONSCIOUS is the commonsense view, citing Campbell (2011) as insisting that our ordinary conception of seeing is of conscious seeing and noting that the *OED* defines perception as involving *awareness* (p. x). But the *OED*'s definition is ambiguous between what

Rosenthal (e.g., 2005, p. 4) has called ‘transitive’ consciousness or awareness—that, is one’s awareness *of* something—and so-called ‘state’ or ‘phenomenal’ consciousness, the sort of consciousness for which there is something that it is like to have it (see Block 1995), which is the kind at issue here. It begs the question to assume that transitive consciousness cannot occur in the absence of state/phenomenal consciousness. And we can hardly credit Campbell’s assertion without further argument.

In any case, we regard it as somewhat of a scholastic point whether or not ordinary people, or historical thought, admit of unconscious perception. We think that they do, but we also think that folk views do not go very far in establishing what a theorist should think is actually the case. Even if the folk explicitly denied the possibility of unconscious perception, perhaps findings in perceptual psychology would nevertheless force us to amend our folk conception of perception to include it, just as findings in theoretical physics require us to revise our ordinary conceptions of matter, energy, and time.

What is more important is whether or not perceptual psychology takes UNCONSCIOUS seriously as a hypothesis—and it’s clear that it does. As Kuhn (e.g., 1970, p. 12) urged, a reasonable way to determine if something is a relatively established phenomenon in a period of “normal science” within a paradigm is whether or not it is taught in the textbooks. And unconscious perception is routinely mentioned in standard vision science and cognitive psychology texts (e.g., Palmer 1999, pp. 639ff; Sternberg & Sternberg 2016, p. 95).

Further evidence that at least one corner of cognitive science takes seriously UNCONSCIOUS is that, if it did not, what would theories of consciousness, such as the global-neuronal workspace theory (e.g., Dehaene et al. 2006), purport to be theories *of*? Such views claim to explain the difference between conscious mental states and their unconscious counterparts—grounding it in differences such as availability for global broadcast. Theorists would not spill much ink exploring these views if they did not believe that there were unconscious personal-level perceptual states to contrast with conscious ones. One might think that such views are not accounts of the relevant kind of consciousness—that they are instead accounts of, for example, what Block (1995) calls ‘access consciousness’. But many such theories, including the global neuronal workspace theory, have been explicitly defended as accounts of state/phenomenal consciousness (see, e.g., Naccache 2018).

Phillips objects that we unfairly note in our (2019) only enthusiasm for unconscious perception among experimentalists, while not citing criticisms of it. We are happy to acknowledge such criticisms. But it goes without saying that in every scientific area, there are disagreements regarding not only methodology, but also the nature and even the existence of target phenomena. While astrophysicists once widely accepted the presence of dark matter, for example, the search for it has turned up little; the alternative hypothesis that gravity itself operates differently at macroscales is one that some astrophysicists are now taking more seriously (for a popular overview, see, e.g., Skibba 2020). However this debate ultimately goes, that there are similar disputes about unconscious perception in cognitive science itself goes no way at all toward undermining the acceptance of UNCONSCIOUS in the scientific community.

There are, however, passages in which Phillips hints at a slightly different notion of “default” hypothesis, wherein a hypothesis is the default just in case it is “more parsimonious than its rivals” (p. x). Phillips maintains, moreover, that CONSCIOUS is simpler than UNCONSCIOUS, endorsing Snodgrass’s view that CONSCIOUS “postulates only one rather than two [or more] perceptual processes” (2002, p. 556, cited on p. x). But UNCONSCIOUS need not be, and is best not, construed as positing two perceptual processes. Instead, it should be viewed as positing a single perceptual process, which *becomes* conscious, via mechanisms described by the competing theories of consciousness, such as global broadcast.

Even if UNCONSCIOUS were not the default hypothesis in either of the two ways scouted above, we do not think that this would make a significant difference to this debate. Alternative hypotheses are always available in any empirical domain—and we see no good reason to think that any special burden or status lies with less widely-held hypotheses than with more widely-held ones. Likewise, in general parsimony is a comparatively weak theoretical virtue (see, e.g., Baker 2016)—and arguably paradigm relative. Quantum mechanics is vastly more complex than Newtonian mechanics, but its complexity elegantly explains the available data.

Perhaps by ‘default hypothesis’ Phillips means instead something like the hypothesis that should be assumed within the target area of study unless alternative hypotheses can be *proven*—and thereby that the burden of proof lies with defenders of alternative hypotheses (see, p. x). But we doubt that this is the right way to think about hypotheses in general. Theory is always underdetermined by data. And as good confirmation holists (e.g., Quine 1951), we regard no hypotheses as confirmed or refuted by any restricted set of evidence, much less any particular finding. Indeed, a theoretical posit may be perfectly warranted, even in the absence of direct experimental evidence for it. Consider, for example, the long scientific search for experimental evidence to confirm the existence of the Higgs boson. Relatedly, some reasons to question evidence for a hypothesis do not require that we reject the hypothesis. It always remains open to adjust background assumptions to reject or re-interpret what may seem to be recalcitrant data, rather than give up on a theory. In light of Lavoisier’s findings about combustion, proponents of phlogiston attributed to it a negative weight, though the view was ultimately rejected in favor of the oxygen theory (see, e.g., Barker & Kitcher 2014, pp. 82-84). While phlogiston theory was never—and arguably could never be—decisively refuted, the preponderance of evidence, coupled with various theoretical considerations, did the theory in.

Of course, no theorists can or should be expected to rule out *all* alternative hypotheses, given that many may be outlandish or not genuinely worth considering. Only genuinely *open* alternatives must be given weight and consideration. What makes a hypothesis “genuinely open”? While we do not venture a positive account, it is plainly *not* the mere fact that some theorists champion the hypothesis. Rather, it minimally has to do with whether scientists have good *reasons* to take the hypothesis seriously—such as that it explains much of the available data and makes fecund/precise/testable predictions.

What matters is thus that UNCONSCIOUS is an open hypothesis that is either endorsed by folk psychology, or at least consistent with it, and taken seriously by many cognitive scientists. We have argued that UNCONSCIOUS meets these criteria. This was the main point of our (2019), not that the view is the default hypothesis—whatever that may be.

What we want, then, are *reasons* to prefer either CONSCIOUS or UNCONSCIOUS. We thus now review some of the ones we explored in our (2019), and Phillips’ replies.

3. Reasons to reject UNCONSCIOUS

In our (2019) paper, we discussed a series of experiments by Peters & Lau (2015) (“P&L”), which seemed to us to supply the best evidence currently available in favor of CONSCIOUS as against UNCONSCIOUS. P&L used a two-interval forced-choice (“2IFC”) technique to find that participants who made judgments about the presence of pairs of masked stimuli were able to bet accurately on the judgment in which they were more confident. Although P&L interpreted their findings as supporting CONSCIOUS, we proposed that there is an explanation consistent with UNCONSCIOUS, according to which participants do not consciously see the stimuli, but form conscious hunches about what was seen, which explain their betting behavior. In his reply, Phillips agrees with us—though for independent reasons—that P&L’s study fails to offer novel support for CONSCIOUS.

Phillips argues that his own alternative hypothesis nevertheless remains preferable, once again urging that our UNCONSCIOUS-plus-hunch explanation is less simple than CONSCIOUS. Our proposed explanation of P&L's results purportedly posits not only two streams of perception, but also hunches, whereas CONSCIOUS posits only a single stream of conscious perception and response bias. However, we are doubtful that our proposed explanation really is more complex. Again, most theories of consciousness urge that the same token state can be conscious or not. And while such a consciousness mechanism may be psychologically complex, it is not more complex—theoretically speaking—than positing psychological mechanisms of response criteria. Similar remarks go for the positing of hunches, which we proposed can be understood as an ordinary form of metacognition evinced in this task.

For confirmation-holistic reasons, it is unsurprising that both CONSCIOUS and UNCONSCIOUS can explain much of the same evidence. It is rarely the case that a false paradigm cannot offer *some* explanation of data. This is why we are not compelled by Phillips' strategy of arguing that individual pieces of evidence put forth in favor of UNCONSCIOUS are instead compatible with CONSCIOUS. By the same token, as we observed in our (2019, pp. 13-14), the possibility that participants in standard masking studies fail to report on masked stimuli due to conservative response bias is, when considering most available studies, only speculative too. Without additional experimentation to tease these hypotheses apart, in many cases it remains open which hypothesis accurately describes what is going on.

Phillips is doubtless right that we therefore cannot conclude that much current evidence regarding phenomena such as masked priming or blindsight are decisive evidence for UNCONSCIOUS. But no such studies are likewise evidence for CONSCIOUS, unless and until we control for criterion bias in the right way. (More on this shortly.) Assuming for the sake of argument that both CONSCIOUS and UNCONSCIOUS equally fit the available data, perhaps we should not decide between them until more evidence is available.

4. Ways forward?

We nonetheless do think there may be ways to move forward in this debate. After all, the hypotheses under consideration make different experimental predictions. The proponent of CONSCIOUS holds that, if we control for criterion bias, participants would verbally report what would otherwise seem to be unconscious perception. On UNCONSCIOUS, by contrast, even if we adequately control for criterion bias, there would be unreportable perceptual states.

To test between CONSCIOUS and UNCONSCIOUS, we need a way to control not only for criterion bias, but also for the possibility that reporting effects are driven by conscious hunches and not conscious perception. The best attempt (so far) at controlling for criterion bias—namely, P&L's experiments—do not offer unimpeachable results in favor of CONSCIOUS. But perhaps there is a kind of bias-free task that is *also* capable of controlling for the possibility of conscious hunches. If such an experiment demonstrated that, under such conditions, participants would verbally report on masked stimuli, then we would be more inclined to accept CONSCIOUS.

On the other hand, one might think that the most straightforward way to control for criterion bias is to ensure that perceptual discrimination is at chance—that is, focus on experiments in which the signal-to-noise ratio is equal to 0, but priming effects are observed. But, as we observed in our (2019), such experiments purportedly face Phillips' problem of attribution—namely, the worry that whatever priming effects participants demonstrate are driven not by personal-level unconscious perceptual states, but rather only by subpersonal states of perceptual processing.

Phillips' argument here depends on adopting a rather stringent characterization of personal-level perception. On his view, the best evidence we have that a state is genuinely perceptual is that it is available to central coordinating agency or, as he more recently puts it, for the guidance of

intentional action (e.g., Phillips 2019, p. 7). But in the masked-priming experiments he canvasses in his (2018) (e.g., Jiang et al. 2006, Norman et al. 2013), all we seem to have evidence for are “stimulus-driven, reflex-like” (p. 495) responses that fall short of the required form of agency.

We argued in our (2019) that, even granting Phillips’ criteria, we have evidence for unconscious visual states that play the role that Phillips requires of them. We focused especially on the case of D.F., an individual with visual-form agnosia resulting from damage to her ventral stream. We urged on the basis of a discussion of Pisella and colleagues’ (2000) results that at slower time scales (over 300 ms), we have no reason to doubt that D.F.’s actions, which are guided solely by unconscious dorsal-stream vision, are sensitive to intention in the way Phillips’ criterion requires. We also argued that there is no basis to Phillips’ inference that the type of action that dorsal-stream vision supports is not attributable to the agent because it is automatic. As we stressed, much of our automatic behavior—for example, that which is involved in skilled action—is so attributable, as evidenced by its sensitivity to and tight interfacing with an agent’s intentions (see, e.g., Fridland 2017; Shepherd 2019; Pacherie & Mylopoulos 2020).

In response, Phillips argues on the basis of a different set of empirical results that D.F.’s actions may indeed be guided by conscious vision. He also argues against our interpretation of the empirical work we cite (Liu & Todorov, 2007) in favor of the sensitivity of automatic action to intention. There are, however, further studies to cite in response (see, e.g., Todorov & Jordan 2000); and we suspect that there are ways to challenge Phillips’ interpretations of the relevant empirical results, which could be explored in future work.

But we again do not consider this kind of back-and-forth to be a particularly fruitful strategy for settling the debate. What we arguably need to do now is step back and examine theoretical considerations for and against these hypotheses.

Here is thus one theoretical worry for Phillips’ position: that his case rests on a distinction between the personal and subpersonal levels of perceptual processing that has been characterized in competing ways by many different theorists (for review, see, e.g., Drayson 2012)—and thus threatens to be arbitrary (see, e.g., Block’s contribution in Peters et al. 2017, p. 8).

Moreover, why should we think that there are *any* clean criteria by way of which we can draw this distinction? (cf. Taylor 2019, who thus concludes that there is no fact of the matter regarding when there is unconscious perception.) Indeed, we should expect our theorizing about the nature of personal-level perception to depend holistically on other theorizing regarding related phenomena such as action or perceptual thought (see Shepherd and Mylopoulos ms.). Likewise, we should remain insistent that this debate be substantive. If we adopt overly demanding requirements on personal-level perception, perhaps not much hangs on whether we call complex unconscious perceptual processing ‘perception’.

Finally, we note that Phillips himself offers no *positive* theoretical reason favoring CONSCIOUS as against UNCONSCIOUS, other than claiming that the former is the (simpler) default position. Such reasons should be given. For our part, we did offer one broadly theoretical argument against skepticism about unconscious perception in our (2019). We turn now to Phillips’ reply to that argument, which we find unsuccessful.

5. Revisiting the dilemma for skepticism about unconscious perception

In our (2019), we argued that skeptics about unconscious perception face a dilemma: either they must maintain that other kinds of mentality such as beliefs or desires also cannot occur unconsciously, or they must explain why perceptual states are unique in the mind in this regard. Both options, we maintained, are questionable.

Phillips attempts to resolve the dilemma by distinguishing mental states from mental occurrences, where the former do not unfold temporally and are thus not candidates for being

conscious, while the latter do unfold temporally and can thus be conscious. Phillips seems to allow that mental episodes, such as the fading of an emotion, can occur without consciousness, but he maintains that these can be explained entirely by appeal to transitions between nonconscious mental states. He writes that, “In this light, it is not unreasonable to propose that all genuinely mental episodes other than those which can be wholly analysed in terms of transitions between non-conscious states are conscious” (p. x).

But we see no support for this position. Instead, we propose that some beliefs, desires, or emotional states arguably manifest in mental occurrences—thoughts, wishes, and so forth—that *themselves* can likewise occur without being conscious. And there is much support for this view. There is, for example, evidence that people can engage in unconscious inference. Consider Mandelbaum’s (2016) work on implicit bias, which demonstrates that we often act in biased ways towards individuals of certain social groups in ways that are best explained by our engaging in patterns of transitions between occurrent propositional attitudes of which we are unaware. As Mandelbaum argues, such inferences are not interactions among unconscious dispositions, but among unconscious mental occurrences (see also, e.g., Jenkin 2020). Similar remarks go for other sorts of cognition, such as occurrent desiderative and emotional states (see, e.g., Rosenthal 2008). If this is right, then we can run the original dilemma again, but this time aimed at perception and other mental occurrences: why is it that perception alone always occurs consciously, while thoughts and wishes do not?

In reply, Phillips might appeal to the supposed temporal dimensions of perceptual occurrences that differ from those of their non-perceptual counterparts. But this cuts no ice; just as one can momentarily perceive red or have a perceptual experience of a passing scene that occurs over time, one can both momentarily have the thought that *p* or a fleeting desire—or think over time that *p* or long for something.

Without an independently motivated reason to think that thought and perception differ in a way relevant to consciousness, Phillips has not adequately addressed our dilemma. But we never intended the dilemma to be dispositive—simply one theoretical consideration to add to the collection of evidence that abductively supports the existence of unconscious perception.²

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